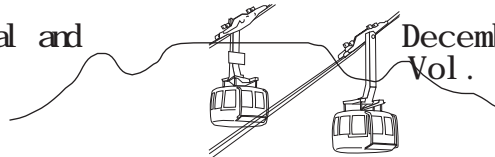


WCB ENGINEERING BULLETIN

The Institution of Certificated Mechanical and
Electrical Engineers
Western Cape Branch (WCB)

P. O. Box 504, Rondebosch 7700



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Vol. 4 no. 6



MISSION STATEMENT : 1. To uphold the image and status of the Certificated Engineer. 2. To represent the Certificated Engineer at ECSA and other decision-making bodies concerning legislation, safety & health standards, the environment and the machinery regulations. 3. To promote continued education and training of its members and future engineers. 4. Promote fellowship in the engineering profession.

Editorial

A local member of ICMEESA has written to express concern that in the Occupational Health and Safety Directorate of the Department of Labour in the Western Cape there are no inspectors who are in possession of the Engineer's Certificate of Competency.

This is a serious omission on the part of Government. We do know that it is the policy of the Directorate to have inspectors qualified at National Diploma level, at least, in diverse aspects of engineering and health, but the essential factor in becoming a Certificated Engineer is the practical experience he is required to gain before he can sit for the EXAMINATION. This is perhaps our correspondent's underlying gripe – he would like to be visited by an inspector who has sat where he has sat and can talk to him about safety and the application of the safety laws from the inspector's own experience in the field.

Although an Occupational Health & Safety inspector does not have to write the public examination in the OH&S Act he is thoroughly instructed in-house in the content and interpretation of the Act. This valuable knowledge he (or she) is in a position to communicate to the management of an enterprise and particularly to the Competent Person during the course of an official visit. And it is hoped that he does so, because it is not possible for the CP to know the finer details of the Act, and the CP would like to be assured that he (or she) is performing his duties within the ambit of the law. But an inspector who has not had industrial experience before joining the Department will need time to build up a body of experience from the experience of others in the course of his work, and during this process he can only apply the law in an academic way, which does not inspire the confidence of the CP.

Another area where an inspector with a GCC has an advantage is in accident investigation. Being familiar with the operation of machinery and the conduct of operators, he should be able to gain a clear picture of what actually occurred and what the more likely causes of the incident were. His assessment and his availability as an expert witness would be of great value to the attorney-general in deciding whether or not a prosecution should be instituted.

Inspectors investigate hundreds of incidents and this knowledge could be used to guide CP's if similar circumstances of which the CP might not be aware are pointed out to him by the inspector during his visit. Many years ago in the U.K. the Factory Inspectorate published a regular periodical intitled simply "Accidents" in which actual incidents were described & illustrated in some detail. If the OH&S Directorate would do something similar and charged a keen price for the periodical, who knows, a lot more inspectors with the necessary qualifications could be employed!

As the Christmas & Festive Season is approaching we would like to convey our good wishes to our readers and their families. May we join the Wise Men from the East who "on coming to the house, they saw the child (Jesus) with His mother Mary, and they bowed down and worshipped Him". ◊

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Local Branch News

Since the last bulletin, we have had our seminar, which proved to be successful, thanks to Chris Schnehage and Fanie Venter and of course all the speakers. We had to deviate from our plan for the dinner/dance — instead of the planned formal event we had an informal evening at the Constantia Nek Restaurant, which turned out to be a most enjoyable evening for all who attended. We want to thank our President, Mr R Holmwood and his wife, who travelled all the way from Johannesburg to attend this event.

Our last general meeting for this year was held on the 17th November 1998. The attendance was disappointing, especially considering the importance of the topics that were discussed. Mr Brian Makrell gave us a most interesting talk on the practical implications of the new Basic Conditions of Employment Act, as well as the proposed Employment Equity Act. Both these acts have serious implications for all, whether in corporate employment or if you are an employer yourself. We want to suggest that all members familiarise themselves with the contents and practical implications of the above mentioned Acts.

At this meeting the following committee members were re-elected for another year:

R T Murphy (Richard later resigned - we want to thank Richard for his contribution this past year. There is no point in wishing him well whilst taking a "rest" from the committee since he will not "rest".)

S. Venter	H. Muller
J. Horne	M. Lyle
M. Jaffe	J. Pereira
M. Buckner (Affiliate)	C. Schnehage
W. Du Toit	

H. T. Wickens (Representative WP Tech. College)

G. Atkinson-Hope (Representative Cape Technikon)

G. Pereira was elected as a new committee member (in absentia) - congratulations, we sincerely trust Mr Pereira will accept.

We want to thank all the committee members for their contributions during this year and thank them all for their willingness to serve for yet another year.

The committee wishes to thank all members who made an effort during this year to attend the visits or meetings or contributed in some way to the efforts and activities of the branch.

We wish all our members and readers a blessed Christmas, and for those who are fortunate enough to take a break during the feastive season we want to wish an enjoyable recuperation. May the real Message of Christmas touch you all once again this Christmas.

God bless *Hein Muller* ◊

Letter to the Editor

Dear Sir,

In a recent visit to the Department of Labour it came to my attention that not one inspector in the Department has a GCC. This is the department which is supposed to enforce the OHS Act yet not one of them has written the law. Secondly from my work I have found out that there are about 30 factories in Cape Town which according to the OHS Act require a GCC. Surely the inspectorate is not doing its job in enforcing the law making conditions unsafe in industry. There is thus no incentive for a young engineer to write the GCC if the inspectorate does not employ them and industry does not employ them.

The certificated engineer in his training has all the tools necessary for the efficient running of a plant and for growth to take place safely in all aspects of industry. This is also not happening in the Western Cape.

Thus I make an appeal for all certificated engineers to stand together and to petition the Department of Labour to have 80% of its inspectors as certificated engineers. This will ensure that engineering is practised correctly in the Western Cape and that growth will occur as I feel that the certificated engineer is practically and academically equipped to do this.

Yours faithfully

P Retief GCC ○

How do they do that?

ADVERTISEMENT: "Dramatic reduction of scale build up". Who does? Soliflo.

With what? With the SCALE WATCHER electronic system.

How do they do that? That's what I am asking myself and others.

The brochure shows a pipe through which the water to be treated flows. Two coils are wrapped around the pipe and connected to an electronic box, creating an "electrical force field", whatever that means. This field apparently does the trick, which is seen in the photo. A clean pipe and one which is almost choked with scale. The benefits derived from this system are tremendous. Think of boiler scale, cooling systems, pipe fouling, you name it.

Now I am not saying this system does not work. I am only asking how does it work.

Take domestic drinking water filters. I bought one which had an CSIR report on the type of filter. Quantity of water to be treated before replacement was given. For me this would last 3 years. Other makes may only last 6 months and not even do all the things as in the report. What I strongly object to is that buyers have to purchase goods without an independent performance report.

Under the Hazardous Chemical Substances regulations suppliers have to provide full product information. Why should the same provision not be made where sellers make certain product performance claims?

The object of advertising is to make people believe. Without solid proof of such claims we, the buyers, reserve the right to reject such claims.

After all, nothing beats an authoritative report when it comes to promoting a product.

A. Wytje ○

Fall of Suspended Scaffold

Ten labourers were lowering themselves on a platform suspended inside a silo which was under construction. The platform consisted of eight steel pipe trusses covered with 3 mm steel decking. These trusses were connected in the centre with a pin. A 100 mm x 50 mm steel channel connected the outer part of the trusses to each other. The whole platform was suspended by four wire ropes each rated at 10 tonnes. The top end was anchored at the top of the silo. The bottom end of each was connected to a 3 tonne Tirfor jack which was connected to the platform by a wire rope (rated at 5 tonnes) wrapped around the steel channel. The total weight of the platform plus ten men was about 2 tonnes. Each Tirfor was operated by two men who were instructed to lower evenly.

When the platform was about four metres off the ground one of the slings connecting the jack to the platform broke, causing the platform to tilt and throw all the labourers to the ground.

They were all taken to hospital. Seven were treated and discharged while the other three sustained a fractured leg, arm and shoulder blade respectively.

The cause of the one rope breaking can be attributed to the manner in which it was wrapped around the steel channel. The sharp edges of the channel caused the wire rope to fracture at this point. This method of attaching the jacks to the platform has been discontinued. A 16 mm steel U-bolt is now welded on the platform channel with the hook of the jack going directly into it.

Comment.

Had this incident occurred further up the silo the result would have been disastrous. Driven Machinery Regulation 18 governs the requirements of lifting machines and tackle. If this device is a lifting machine as defined although it is not power driven then a 6 monthly inspection is required. However, it is obvious that this device should be inspected before every use because it is carrying persons who are continually at risk. The present regulation DMR 18(8) requires a cradle for carrying persons to be approved by an inspector. This device should also fall into this category.

The device used may also be a suspended platform which is defined in the General Safety Regulations as a working platform supported by one or more separate suspensions.○

Affiliate Member

We welcome Bill Brown of PEB Management Services
as our 23rd Affiliate.

Legal Knowledge – June 1998 Occupational Health & Safety Act No 85 of 1993

The (b) part of two questions are answered

Ques 4(b) An enclosure in a factory is classed by definition as a confined space. The air in the confined space cannot be certified safe. There is no danger of a fire or explosion. It cannot be purged or ventilated to provide a safe atmosphere. State only FIVE regulation requirements that must be complied with when a person enters such a confined space. (10)

Answer

General Safety Regulation 5

- (i) The person must use approved breathing apparatus
- (ii) The confined space must be isolated from all pipes, ducts and other communicating openings
- (iii) The person must be attached to a rope with an assistant at the free end
- (iv) A person trained in resuscitation must be in attendance
- (v) Approved breathing and resuscitation apparatus must be available outside the confined space.

Ques 5(b)

The general machinery regulations provide for safe guarding of machinery.

State briefly the requirements of the regulations imposed on the user of machinery in respect of:

- (i) Suitability and safety of machinery used by him
- (ii) Exposed dangerous parts of machinery which is within reach of a person
- (iii) Condition of safety equipment
- (iv) Materials used in the construction of safety equipment
- (v) Premises where machinery is situated and constitutes a danger to persons.

Answer

General Machinery Regulation 3

- (i) Machinery must be fit for purpose and must be installed, operated and maintained safe
- (ii) Exposed dangerous parts within normal reach to be effectively safeguarded unless an inspector gives written permission otherwise
- (iii) To be kept in good working condition and safely used
- (iv) Quality of material and construction fit for purpose
- (v) Entrances to unattended premises to be kept closed and locked.

PATRON MEMBERS

Schneider SA (Pty) Ltd	Tel: 531-1722
Globe Engineering Works (Pty) Ltd	Tel: 448-4640
Cape Automation Systems CC	Tel: 511-2382
Improvair (WP) (Pty) Ltd	Tel: 797-9131
Dorbyl Marine (Pty) Ltd Ship Repairs	Tel: 47-5170
Drake & Scull (Pty) Ltd	Tel: 683-7056 Fax: 683-7088
Circuit Breaker Industries Ltd	Tel: 931-3125 Fax: 931-3120

Occupational Health & Safety Act No 85 of 1993

Issue No 15

GENERAL SAFETY REGULATIONS (GSR)

In force 30 May 1986

As the title states these are regulations of a general nature. Only those of topical interest will be highlighted.

GSR 2:

Personal Safety Equipment & Facilities

GSR 2(1): Evaluate the risk and make the situation safe.

GSR 2(2): Where the condition or situation cannot practically be safeguarded personal protective equipment (PPE) must be provided to make it safe.

GSR 2(3): This subregulation lists various items of PPE.

GSR 2(4): PPE may not be removed from the workplace.

GSR 2(6): Employees must use the PPE provided.

GSR 3:

First Aid, Emergency Equipment & Procedures

In general, this regulation specifies the number of First Aid boxes and the qualifications and number of First Aiders (with valid certificates) for the number of employees. The FA equipment must be suitable for the hazards and the First Aiders trained for those hazards.

GSR3(6): The position of the FA box must be clearly displayed as well as the name of the person in charge of the box.

GSR 3(8): An eye-wash fountain must be provided if biological or chemical substances are in use.

GSR 3(9): A fast-reacting deluge shower must be provided where dangerous substances can affect the skin of an employee.

GSR 4:

Use and Storage of Flammable Liquids

“Flammable liquid means any liquid which produces a vapour that forms an explosive mixture with air, and includes any liquid with a closed-cup flash-point of less than 55 °C.”

GSR 4(2): Where flammable liquid is applied a special enclosure must be provided.

GSR 4(3): Ventilation and personal masks must be provided when spraying.

GSR 4(4 to 6): These sub-regulations specify the air speeds for rooms and enclosures and the ducting arrangements.

GSR 4(7): A room must have two opposite doors and an unbreakable window.

GSR 4(8): Nothing that could ignite a vapour may be brought into a room.

GSR 4(9): Waste material to be removed daily. Only one day's flammable liquid to be brought into the room with the proviso that excess liquid may be kept in a locked fireproof wall cabinet.

Containers such as drums to be kept tightly closed when not in use and when empty must be safely disposed of. Rooms, ducts and fans to be kept clean using non-sparking implements.

GSR 4(10): Specifies the principles upon which a flammable liquid store may be built and used.

GSR 4(11): Fire fighting equipment.

GSR 4(11): The use of flammable liquids on building sites.

Where necessary PPE must be provided. ○

Skills Upliftment & Development

Western Province Technical College has developed from an apprenticeship-only institution, previously known as Maitland Technical College, to a College for the education and upliftment of all peoples involved with engineering. The five major departments are mechanical, motor, electrical, electronics and civil. We have large well-equipped workshops for these purposes. With the emphasis on engineering focusing on skills development, Western Province Technical College has developed for, and in conjunction with, industry a variety of basic and advanced courses. These courses are aimed to suit your company requirements.

WP Technical College is accredited by METB, Motor Industry Training Board, Furniture Industry Training Board, as well as Building Industry Training Board. Other accreditation is awaited. WPTC is currently busy with training for various companies in accordance with their specific needs. Courses on offer are for example, the upliftment of handymen, welding courses such as stick, mig, tig and gas, fitting and machining courses, motor maintenance, plumbing, woodwork, etc. The electrical department offers basic courses in the following: fault finding, wiring, panel wiring, house wiring, motors and starters AC and DC, domestic and commercial refrigeration and appliance repairs.

The electronics department is fully accredited and offers among others courses in basic electronics, tv repairs, microwave, radios, audio and computers.

WPTC has many well qualified students, in theoretical as well as modular practical studies, wanting to start their working career in the engineering world. Please pay us a visit or contact us by phone at number 531-2105/6/7 or fax number 531-0361 where our well-trained staff will assist you with any of your needs.○

Old soldiers Never Die

At the annual ICMEE dinner on 30 October Basil and Marion Mullon from George were present. Basil says he has been a member of ICMEE for 40 years from the time he joined as a student member. Any other old stagers around? He is an ex-Rhodesian. He says he has retired three times, but one suspects he is probably still ready for active service.○

Plant Engineering

June 1991 Question No 9

- a) The candidate has to define the term hazard with respect to a workplace. (3)
- b) An explanation has to be given of the following concepts:
(i) how the work process is affected by hazards;
(ii) how hazards can be controlled;
(iii) the chief causes of accidents; (9)
- c) The candidate has to state four activities that are essential to effective accident prevention. (8)

Answer to Question 9

- a) "Hazard" is defined in the OH&S Act of 1993 as: a source of or exposure to danger.
In the working environment a hazard can be interpreted as a condition which threatens the health or safety of persons in that environment through the ingestion of toxic substances, or asphyxiation through immersion in odourless gases such as nitrogen or carbon dioxide, or explosion of flammable vapours or dust, or exposure to dangerous radiation, or to physical calamities such as injury through the collapse of buildings, malfunction of equipment, etc.
- b) (i) Hazards that exist in the workplace can:
- disrupt the process;
- reduce output;
- prejudice the quality of work delivered;
- undermine employee morale;
- result in expensive accidents involving both plant and personnel.
- (ii) Hazards in the workplace can be controlled if:
- personnel have sufficient knowledge to identify the hazards;
- systematic, intelligent, sensible inspections are routinely conducted
- to locate and identify hazards.
- mechanisms exist whereby identified hazards are controlled;
- such control mechanisms are used timeously;
- immediate action is taken to remove such hazard.
- (iii) The main causes of accidents can be regarded as:
- ignorance;
- inadequate (or lack of) planning;
- insufficient supervision;
- disregard for correct procedures;
- inappropriate actions.
- c) Fundamental activities required for successful accident prevention include, inter alia:
- detailed, effective planning of all activities;
- structured, purposeful control of all aspects of the process undertaken;
- clear communication between all involved parties;
- adequate, cogent training of all persons;
- crystal clear recognition of engineering in a position of absolute paramount importance in safety
- very strict adherence to stipulations contained in procedures, directives, Acts and Regulations. ○

Joke

The minister was giving a lesson to a Sunday School class: "Now, boys," he said, "Suppose I saw a man beating a monkey, and stopped him, what virtue would my action show?" At which one bright boy replied: "Brotherly love, sir!"

"The greatest pleasure I know is to do a good action by stealth, and to have it found out by accident." Charles Lamb.○